

I use an achromatized dark prism, which is the only way of getting sufficient command over the tint of the surface. The swelling, as it were, of the grains when more light is admitted, and their contraction when a darker tint is used, are marked; and I can think of no better description than that I gave you for their appearance, that is, the appearance of an attempt at a flat tint on very rough drawing-paper. This is of course closely analogous to Herschel's, of a subsidiary flocculent precipitate, and must be so from the way paper is made.

"As to penumbrae, I cannot say so much: they have always seemed to me more filamentous than what I understand you (*Memoirs*, Vol. xxxiii.) as rice-grains. I have been mostly attracted by the *umbra*, and thus have used more light probably than was best for penumbra; but the appearance has been rather of fascines of semi-transparent sticks, which I took for blurred willow-leaves. I will pay more attention in future to the appearance of these. The view with my strong light is very beautiful. I sometimes almost felt as if a spot were the entrance of a deep cave bordered by brilliantly-lighted icicles.

"The most remarkable thing in Mr. Langley's letter is his description of *umbra* structure. 'Filaments of immeasurable fineness are at times seen projected on the *umbra*, looking collectively like carded wool,' p. 258. 'The whole *umbra* is seen at times to be nearly or wholly made up of sunken banks of the filaments,' p. 259. You will note that this is almost identical with my description in my letter to you—'a thin flock of cotton wool on black velvet.' Surely I, with a 6-inch aperture, and Mr. Langley, with a 13-inch, have seen the same thing."

Colonel Tennant remarks in the same letter that he has had good views of *Saturn* and *Mars*. "The same evening that I observed *Saturn*, crape ring, and all, I saw the companion of *Antares* staring; and on two occasions lately I have seen *Mars* well. I have several times looked for the companion of *Antares*, but I never before could get it clear of the blurr. So you will judge that I do not get much definition as a rule."

Roorkee, 1875, August 16.

Note on the Position of the Equinoxes. By Prof. Simon Newcomb.

In the *Monthly Notices* for May 1875, page 350, an erroneous statement is attributed to Dr. Gylden, which, though unimportant in itself, may tend to spread a serious misapprehension respecting the position of the Equinox, to be deduced from the observations of the Sun made at the principal Observatories. The discordance of the results for the position of the Equinox may be seen from the following table, which shows the outstanding corrections to the Right Ascensions given in my paper in the

Washington Observations for 1870, which result from the observations of the Sun made at the several Observatories. They are deduced from the data given in § 5 of the paper referred to.

	s	Weight.	Years.
Greenwich	-0.028	18	1836-70
Pulkowa	-0.019	5	1842-50
Edinburgh	0.000	4	1836-43
Cambridge (Eng.)	+0.006	8	1833-56
Paris	+0.025	6	1854-65
Washington	+0.038	8	1862-69

The weights are those I actually assigned in the determination of the Equinox. As each series of observations is copiously discussed in the paper referred to, I am unable to account for the statement that I have *probably* omitted Paris, and given very great weight to Washington. A slightly greater weight was given to observations where the Sun culminates at a high altitude the entire year, and this course seems to me entirely justifiable.

As Dr. Gylden's Right Ascensions are 0^s.017 less than mine, the corresponding corrections to his Equinox would seem to be—

	s
Greenwich	-0.011
Pulkowa	-0.002
Edinburgh	+0.017
Cambridge (Eng.)	+0.023
Paris	+0.042
Washington	+0.055

This discordance of the Equinoxes derived from the Greenwich and Washington Observations is something I am entirely unable to account for, more especially as it has, without the slightest alteration, survived a complete change of instruments in each Observatory. The state of the case seems to be that: while the two Observatories give the same result for the Sun's absolute Right Ascension, or for the moment of the Equinox—in comparing the Sun with stars, the Greenwich differences (☉'s R.A. — *'s R.A.) is constantly 1" greater than that observed at Washington.

Corrections to Professor Gylden's List of Right Ascensions of 103 Fundamental Stars, May Number, pp. 349-356. Communicated by Prof. A. D. Wackerbarth.

"In the Right Ascensions themselves there is only one erroneous figure, the R.A. of ζ *Aquila*, which ought to be

"p. 353, col. 1. 18^h 59^m 39^s.848.